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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY USSR

SUBJECT 1. Leningrad Central Boiler and Turbine Institute
2. Azovstal Metallurgical Plant in Zhdanov
3. Control and Measurement Instrument

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1. Attached are two reports

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(I)

2. The report on the Central Boiler and Turbine Institute i/n Polzunov in Leningrad, is primarily a detail of the administrative organization of the plant. Personalities and brief mention of work programs for various units is given. Some floor plans for office spaces are supplied.

3. Information on the Azovstal Metallurgical Plant and the Kharkov Control and Measurement Instruments Plant is also primarily an administrative breakdown, with very minor mention of the production.

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COUNTRY: USSR (Leningradskaya Oblast) DATE: 4 January 1958

SUBJECT: Central Boiler and Turbine Institute i/n Polzunov in Leningrad NO OF PAGES: 20

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History

1. The Central Boiler and Turbine Institute i/n Polzunov in Leningrad (Tsentralnyy kotloturbinnyy institut imeni Polzunova - TsKTI) was probably founded in the middle 1920s for the carrying out of research activities in the field of boiler and turbine construction. These boilers and turbines were mainly destined for electric power stations. Subsequently, the Institute also concerned itself with boiler installations for steamships and mobile electric power stations (energopoyezda). After World War II, the Institute opened a branch in Moscow. This branch specialized more in the design of continuous operating coil boilers (pryamotochnyye kotli), while the Leningrad Institute specialized in the design of drum-shaped boilers (barabannyye kotli). Simultaneously both branches of the Institute designed automatic regulators for boilers and turbines.

Administrative Subordination

2. Until 1956, the Institute was subordinate to the Central Board for Boiler and Turbine Industry of the Ministry of Heavy Machine Industry (Glavk Kotloturboprom ministerstva tyazhelogo mashinostroyeniya). Toward the beginning of 1956, the Institute became subordinate to a committee for new techniques, which was organized directly under the Council of Ministers. Apparently, in line with the new decentralization policy of Krushchev, the Institute might have become subordinated in 1957 either to the Leningrad Economic District (rayon) or to some ministry (sic). 25X1

Organization

3. the organization of the main branch of the Institute in Leningrad. The Institute consisted of the institute proper, the State Experimental Electric Power Station (Gosudarstvennaya eksperimentalnaya elektrostantsiya - GEES) and the State Experimental Plant (Gosudarstvennyy opytnyy zavod - GOZ). Since June 1957, the GEES and GOZ were combined into 25X1

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the Industrial Combine (Promkombinat) of the Institute. The Institute occupied two locations in Leningrad; one was at Ulitsa Doroga v Sosnovka, House No 16; the second was located in another part of Leningrad. the entire Institute, including the Industrial Combine, employed about 1,500 individuals.

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4. the following details concerning the organization of the Institute (See the attachment for a chart of the organization of the Central Boiler and Turbine Institute i/n Polzunov):

A. Chief of the Institute was the Director, Nikolay Vasilyevich Ilyukhin.

B. The Director's first deputy was the Deputy for Scientific Matters (Zamestitel po nauchnoy chasti), Kanayev (fnu), who had a Master of Technical Sciences (Kandidat tekhnicheskikh nauk).

C. The Director's second deputy was the Deputy for Housekeeping Matters (Po khozyaystvennoy chasti), Ivan Danilovich Chernaslivin, who was in charge of the supply department (otdel snabzheniya) and of warehouses or supply rooms (sklady), finances and accounting (finchast), custodial services (tekhnicheskiy personal), the pass office (byuro propuskov), and the guards (okhrana).

D. The Chief of the Personnel Department (Otdel kadrov), Papliyan (fnu), an Armenian, was directly subordinate to the Director of the Institute. The Personnel Department, in addition to its chief, comprised three women. The Personnel Department kept personnel records for all employees of the Institute and was responsible for the hiring and dismissal of all personnel.

E. The Production Planning Department (Planovo-proizvodstvennyy otdel) was directly subordinate to the Director. It planned the activities and work of the Institute on an annual, quarterly, and weekly basis, and subsequently controlled the fulfillment of these plans. This department also kept an account of all materiel and supplies used by the Institute, of all expenses, and of work norms.

F. The Scientific Council (Uchennyy sovet), numbering about 30 members, comprised the Deputy for Scientific matters, who was the Chairman of the Council, the chiefs of the ten production departments, numbered 2 through 11, and other distinguished professors and doctors of technical sciences who worked in the various departments. It was responsible for drafting technical plans, for discussing such plans with regard to technical feasibility or technical problems inherent in such plans, and for tentatively determining the time necessary to fulfill the plans.

(1) The Institute would receive certain tasks from the Central Board (Glavk) for Boiler and Turbine Industry of the Ministry of Heavy Machine Building. The Scientific Council would study these tasks and determine which one of the ten production departments of the Institute would be responsible for working on this task. The production departments concerned would then receive the tasks and study them at so-called production conferences held at the department level. As a result of these conferences, the department would draft a more detailed, corrected, and amplified plan, taking into consideration all technical problems involved in carrying out a given task. These more elaborate department plans would again be studied by the Scientific Council and eventually corrected, altered, and approved by it. The plans approved by the Council would be

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sent to the Central Board of the Ministry; the Central Board would study it, approve it, and return it to the Institute. The plan would at that time become law (zakon) and represent a definite task to be fulfilled by the Institute for the following year.

(2) All departments or their subdivisions involved in a particular task would then make estimates of the materiel, supplies, and money needed to fulfill the task. These estimates were transmitted to the Production Planning Department where they were studied, coordinated with the Central Board of the Ministry, necessary corrections made, and then approved. Subsequently, the Production Planning Department would make the necessary applications or requisitions (zayavki) for the materiel, supplies, workers, and work norms needed to fulfill the task or plan. In agreement with the various production departments concerned, the Production Planning Department would break down the yearly plan into quarterly and monthly plans and translate the data of such plans into percentages of work to be fulfilled, into amounts of rubles to be spent, and into the work norms or work hours required for the project.

(3) The Scientific Council would meet each month and study various scientific studies, master's theses, and doctoral dissertations prepared by various members of this or other institutes. The Council would hear and pass on the defense of such theses by candidates for the master's (kandidat) or the doctor's (doktor) degree. The Scientific Council would also meet to discuss, monitor, and guide the work of the various departments in connection with the fulfillment of their technical tasks and plans.

(4) Subordinate to the Scientific Council was the Standard or Calibrating Laboratory (Etalonnaya laboratoriya). The laboratory, which employed about 30 technicians and mechanics, periodically verified and repaired all measuring instruments, equipment, and devices used by all the production departments.

G. The Chief Engineer of the Institute, Grigoriyev (fnu), was directly subordinate to the Director of the Institute and directed the activities of the Industrial Combine.

H. Department No 1, also known as the Special Unit (Spetschast) or Secret Department (Sekretnyy otdel) possibly comprised about five individuals. It handled all classified scientific literature and documents used by the Institute. The majority of literature at the Institute was not classified. Example of classified documents were Soviet Navy orders and work connected with the use of radioactive material. Department No 1 also kept the records of personnel having access to classified work and material.

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it carried out all classified correspondence, and, in this connection, utilized the secret MVD-controlled courier service (Spetssvyaz).

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I. Departments No 2 and 3 were the first two of ten production departments. Departments 2 and 3 were concerned with designing, improving, and perfecting boiler installations.

J. Department No 4 comprised several chemical laboratories, which carried out chemical analyses and related work for its own use and for other production departments.

K. Department No 5, also known as the Automatic Regulator Department (Otdel avtomaticheskogo regulirovaniya) consisted of three laboratories: the Laboratory for Boiler Automatization (Laboratoriya kotelnoy avtomatiki); the Laboratory for Turbine Automatization (Turbinnoy avtomatiki); and the Laboratory for Automatization of Special Installations (Avtomatiki spetsialnikh ustanovok), which was also referred to as the Laboratory for Automatization of Ship Boilers. The chief of the Department was Viktor Danilovich Piven, Master of Technical Sciences and a Stalin Prize Laureate.

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(1) The chief of the Laboratory for Boiler Automatization, 25X1 was Engineer Valentin Kuzmich Glukhov, Master of Technical Sciences. This laboratory also comprised some 30 individuals, of which about 20 were women. The personnel of the laboratories was again subdivided into groups (gruppy) which changed in composition and number in accordance with the work that was being performed by the laboratory. The groups were formed to handle specific tasks in the most efficient manner. On the average this laboratory consisted of six groups, each headed by a group leader (rukovoditel gruppy) and bearing his name. 25X1

(a) Zamanskiy Group (Gruppa Zamanskogo): This group was made up of Engineer Abram Markovich Zamanskiy, the leader, Technician Valeriya Aleksandrovna Berzina, and Technician Viktor Kirilovich Raylan. 25X1

(b) Glukhov Group: This group was made up of Glukhov, the laboratory chief, Engineer Danay Vasilevich Naletov, 25X1 Engineer Lidiya Vladimirovna Lashenko, and Technician Valentina Loginava.

(c) Shumskaya Group: This group was made up of Engineer Lidiya Stepanovna Shumskaya, Master of Technical Sciences, Engineer Bronislav Ivanovich Peskovoy, and two female engineers and two female technicians.

(d) Ganzherli Group: This group was made up of Engineer Emanuel Ilich Ganzherli, Engineer Natan Vladimirovich Kvasha, and one female technician.

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(e) Paperny Group: This group was made up of Engineer Grigoriy Ilich Paperny, who was also the Party Organizer (Partorg) for Department No 5, and one engineer and one technician.

(f) The sixth group [redacted] was made up of about four people. 25X1

Besides these personnel, the laboratory also comprised about four mechanics who worked for all groups in the laboratory.

(2) The chief of the Laboratory for Turbine Automatization was Engineer Ivan Podbello, Master of Technical Sciences. This laboratory comprised about 20 individuals, of whom about six were engineers, ten technicians, and four mechanics.

(3) The chief of the Laboratory for Automatization of Special Installations was Engineer Nikolay Ivanovich Arsenev, Master of Technical Sciences. In addition, this laboratory comprised about 15 individuals, including five engineers, seven technicians, and three mechanics.

L. Departments No 6 and 7 were concerned with designing, improving, and perfecting various types of turbines.

M. Department No 8, also known as the Endurance Testing Laboratory (Laboratoriya prochnosti), conducted endurance experiments on various types of boiler and turbine construction and parts.

N. [redacted] the functions of Departments No 9 through No 11. 25X1

O. Directly subordinate to the Director of the Institute was a Technical Information Office (Byuro tekhnicheskoy informatsii), with about 20 individuals, which produced blue prints, photographs, and also prepared translations from [redacted] scientific and technical literature. 25X1

5. The Industrial Combine was a separate entity, which, however, was subordinate to the Director through the Chief Engineer of the Institute and served the latter. The Industrial Combine consisted of two main subdivisions: the State Experimental Plant and the State Experimental Electric Power Station. The main function of the Experimental Plant was to produce experimental models or test pieces in accordance with orders and specifications issued by the Institute. The main function of the Experimental Electric Power Station was to serve as a testing installation for conducting tests of machinery and devices such as boilers, turbines, and automatic equipment designed and developed by the Institute. The Combine was headed by a director who was directly subordinate to the Director of the Institute.

A. The Experimental Electric Power Station was directed by a chief engineer and comprised the following subdivisions:

(1) Boiler Shop (Kotelnyy tsekh), which produced steam of certain parameters of temperature, pressure and humidity;

(2) Machine Shop (Mashinnyy tsekh), in which steam from the boiler shop set turbines in motion;

[redacted] 25X1

(3) Electrical Shop (Elektrotsekh), where generators driven by turbines from the machine shop produced electricity;

(4) Heat-measuring Laboratory (Teplo-izmeritelnaya laboratoriya), where the steam was subjected to various analyses and measurements.

B. The Experimental Plant was also directed by a chief engineer and comprised the following departments:

(1) Department of the Chief Mechanic (Otdel glavnogo mekhanika). This department directed the Mechanical Job Shop (Slesarnyy tsekh), which worked on parts and fittings, the Blacksmith Shop (Kuznechnyy tsekh), the Machine Shop (Mekhanicheskiy tsekh), which worked with machine tools, the Galvanizing Shop (Galvanicheskiy tsekh), which galvanized different parts, the Carpenter's Shop (Stolyarnyy tsekh), and the Foundry Shop (Liteynyy tsekh), which performed various castings.

(2) Department of the Chief Technologist (Otdel glavnogo tekhnologa). This department was responsible for preparing the flow-sheets for the production of various parts.

(3) Department of the Chief Designer (Otdel glavnogo konstruktora). This department, which included a designer's office (Konstruktorskoye byuro), designed various auxiliary equipment, tools, and dies.

General Activities of the Institute

6. The production departments of the Institute engaged in three types of work, all related to the boiler and turbine field:

(a) Theoretical research exclusive of any practical application or work;

(b) Research on various types of material, such as research on photo-electric resistance of transistors or thermistors, with a view toward utilizing them in the designing and development of automatic regulators;

(c) The design, development, and construction of experimental models of automatic regulators.

The main trend along which the activities of the Institute were directed was the creation and perfection of various models of cylinder or drum-type steam boilers (barabannyye paroviye kotli) with an evaporative value (para proizvoditelnost) up to 660 tons per hour, turbines to operate with these boilers, and automatic regulating systems or regulators (sistemy avtomaticheskogo regulirovaniya) for these boilers and turbines. All such equipment designed by the Institute was known as TsKTI-type equipments, for example, Kotli TsKTI and Regulatory TsKTI.

Activities of Department No 5

7. Since about 1930, the main trend of the work and activities performed by Department No 5 was the development and perfection of so-called electro-mechanical automatic regulator systems. These systems were basically copied from the automatic regulators produced by [redacted] The purpose of automatic regulators was to maintain boilers and turbines constant in terms of parameters. Department No 5 25X1

[redacted] 25X1

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designed single, dual, triple and quadruple-input (odno, dvukh, trekh, chetreyk-impulsnye) regulators, also known as TsNTI Regulators. These regulators fell into several categories: proportional regulators (proportsionalnyy); back feed regulators (s obratnoy svazyu); and both of the inflexible (zhestkaya obratnaya svyaz) and of the flexible type (gibkaya ili izodromnaya obratnaya svyaz). Since about 1955 the Laboratory for Automatization of Special Installations in Department No 5 engaged in the development of regulators based on photoelectrical resistance (regulatory na foto soprotivleniyakh). One research group in the Laboratory for Boiler Automatization engaged in the development of pneumatic (pnevmaticheskiye) regulators.

8. In 1954, the Laboratory for Boiler Automatization was given the task of creating an automatic regulator system for boilers working on coal dust and blast-furnace gas fuel. In accordance with this, the Zamanskiy Group developed a technical automatic regulator device specifically designed to function in connection with Boiler No 3 at the Heating and Power Plant (Teploelektro tsentral - TETs) of the Azovstal Metallurgical Plant in Zhdanov (N 47-05, E 37-33), Ukrainian SSR. Boiler No 3 was a cylinder or drum-type boiler with a maximum evaporative value of 230 tons per hour. The device was developed by the Institute personnel with the collaboration of engineers from the Heating and Power Plant of Azovstal. During 1954, 1955, and part of 1956, the Experimental Plant of the Institute produced an experimental model of this device consisting of sixteen regulators. The entire regulator device or system was taken to the Azovstal Plant and by August 1956, was installed there in about six months [redacted] Subsequently, a group of employees from the Institute remained at the Azovstal Plant to take care of necessary adjustments and tuning. By December 1956 all adjustments had been effected and tests were conducted by the group of employees from the Institute in collaboration with employees from the Heating and Power Plant. After the successful completion of tests, an agreement was reached between the Institute and Azovstal to put this automatic regulator system into service. In this instance mass series production of this automatic regulator system by Soviet industry was not contemplated. However, in other instances this would happen.

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9. [redacted] the development by the Institute of any device or equipment that was subsequently adopted for mass or series production by Soviet industry, [redacted] the general procedure followed in such cases. In all cases, the same procedures which were followed in installing the regulator system at Azovstal prevailed. The Institute, with the help of the Experimental Plant of the Industrial Combine, would develop an experimental model of the particular device or equipment and put it through a series of tests. These tests would take place either in some plant or in the Experimental Electric Power Station of the Institute's Industrial Combine. After the successful completion of tests the entire project, including designs, plans, and technical specifications, together with the reports, recommendations, and approvals from the personnel of the plant where such tests had been made, were sent to the ministry to which this plant was subordinated. The ministry in turn would transmit all such documents to its own specialists for review and recommendations. In the event these specialists approved the project, it was passed on to one of the design offices of the ministry, where its own changes and improvements would be added. During this entire process the Institute might be consulted for technical guidance and advice. The project would be given to some plant for series production. [redacted]

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[redacted]

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[redacted] 25X1

[redacted] two plants which had been producing equipment originally designed by the Institute, the Venyukovo Fixtures Plant (Venyukovskiy armaturnyy zavod - VAZ), located in Venyukovo (N 55-10, E 37-25), Moscow Oblast, which produced miscellaneous automatic regulators and parts,and the Ilmarine Plant (Zavod Ilmarine), located in Tallin, Estonia, which also produced automatic regulators and parts. 25X1

Salaries

10. [redacted] the following salary figures: 25X1

	Position	Salary in Rubles Per Month
(1)	Chief of Department No 5	4,000
(2)	Laboratory chief with master's degree	3,000
(3)	Laboratory chief without master's degree	1,600 - 1,800
(4)	Group chief with master's degree	3,000
(5)	Group chief without master's degree	1,600 - 1,800
(6)	Senior engineer	1,200 - 1,400
(7)	Engineer	1,000 - 1,200
(8)	Technician	600 - 800
(9)	Mechanic	1,000 - 1,500

11. Trade Union Organization

Practically all employees of the Institute belonged to the Trade Union Organization (Profsoyuznaya organizatsiya),also known as the Trade Union, which was a branch of the Heavy Machine Construction Workers Trade Union. All members paid dues amounting to one percent of their gross pay. At the head of the Trade Union Organization within the Institute was the Secretary of the Plant Committee of the organization (Sekretar zavkoma). This was a full time position (shtatnaya ili osvobozhdennaya dolzhnost). Under the Secretary was the Plant Committee (Zavodskoy komitet), which consisted of the following members:

(a) Trade-union organizers of each department in the Institute who were elected publicly and who served without compensation. This was a full-time position for these individuals, who numbered about twenty.

(b) One cultural representative (kult sektor). This was a full-time position held by a man who was in charge of directing cultural and recreational activities, as well as evening parties.

(c) One sports representative (sportsektor). This was a full-time position held by a man who directed all sports activities.

[redacted] 25X1

[redacted] 25X1

(d) One treasurer (kassir). This was a full-time position held by a man who collected dues and conducted the financial business for the Trade Union Organization. The Trade Union Organization, and more specifically the Plant Committee, on the basis of medical reports, arranged for members of the Institute to go to resorts, rest homes, and occasionally to take tourist trips. The Industrial Combine had its own analogous Trade Union Organization.

12. Party Organization

At the head of the Party organization in the Institute was the Secretary of the Party Committee, also known as the Institute Party Organizer (Partorg instituta). This was a full-time position; therefore, if a member of the Institute was selected for this position, he was excused from any other duties. Subordinate to the Party organizer was the Party Committee of the Institute (Partkom), consisting of representatives from the various departments and of a few full-time members [redacted] 25X1 In each department of the Institute was a Party office (Part byuro) consisting of three or four members. One of these members was Secretary of the Party office and also its representative on the Party Committee. The Party Committee directed the activities of all of these Party offices. It also directed the activities of the Komsomol, the organization of which paralleled that of the Party organization in every detail. There was a Secretary of the Komsomol Committee (Komsorg), and a Komsomol Committee (Komitet komsomola) consisting of the secretaries of the Komsomol offices of the various departments.

13. General Site Layout

[redacted] the main location occupied by the Institute at Ulitsa Doroga v Sosnovka, House No 16, in the Vyborg Side District of Leningrad (Vybergskaya storona). The area occupied by the Institute, which was surrounded by a two-meter-high metal fence, was about 100 x 100 meters. On the west side of the Institute was located the Scientific Research Institute No 380 (Nauchno-issledovatelskiy institut-NII - 380), which was a television institute (see Sketch A, page 10, for a diagram of the general site layout of the Central Boiler and Turbine Institute i/a Polzunov, Leningrad). The Physical and Technical Institute (Fiziko-tekhnicheskiy institute - FTI) was located on the east side of the Institute. The garden of the Polytechnic Institute (Politekhnicheskiy institut) was located on the south side of the Institute. 25X1

[redacted] 25X1

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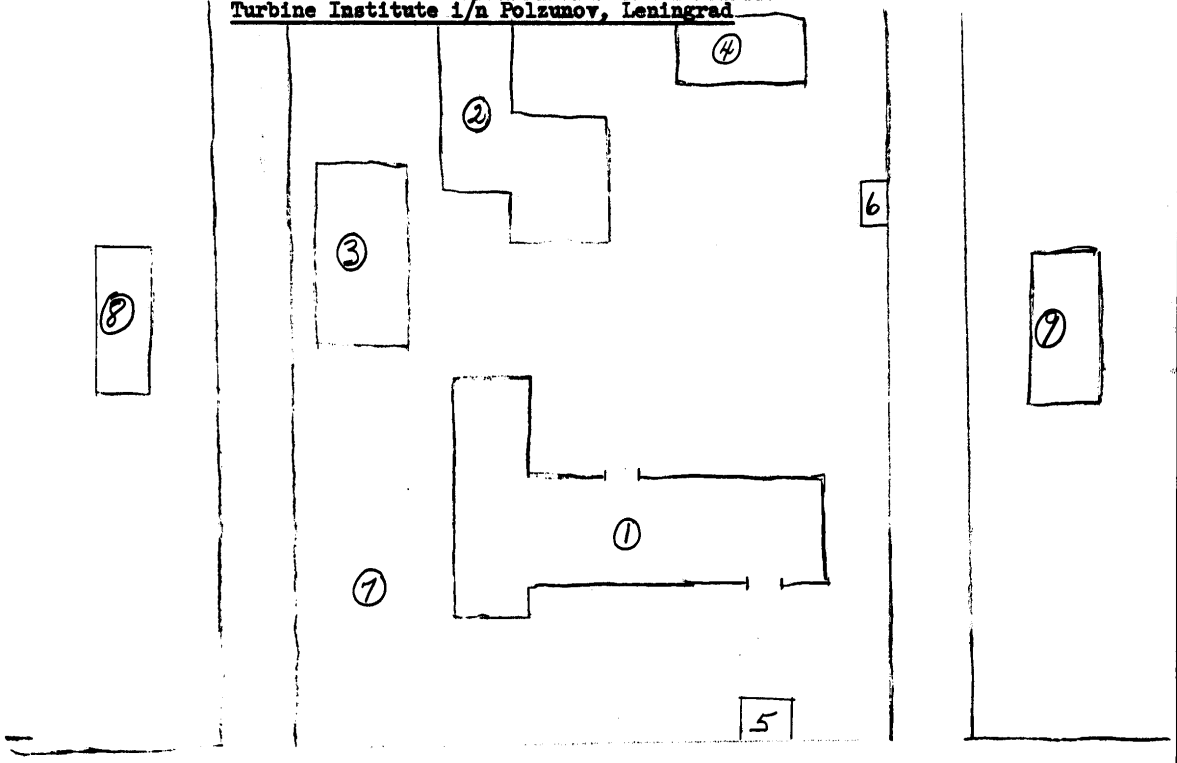
Sketch A
General Site Layout of the Central Boiler and Turbine Institute i/n Polzunov, Leningrad



The following is a legend to Sketch A, the diagram of the general site layout of the Institute:

1. Main building. This was a four-story, yellow-brick building about thirty meters long and from six to ten meters wide. It had two unguarded entrances, which were open day and night. (See Sketches B-E and legend to Sketches B-E on pages 12 - 17 for a full layout of the main building).

2. Workshop building. This was a three-story white-brick building, which was about ten meters long and ten meters wide. It had two unguarded entrances (see Sketches F-H and legend to Sketches F-H on pages 18 - 20 for a full layout of the workshop building).

3. Supply building. This was a two-story white-brick building, which was 15 meters long and 6 meters wide. This building contained supply rooms (sklady).

4. Supply building. This was a one-story wooden shed, which was 15 meters long and ten meters wide.

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[redacted] 25X1

5. Main entrance and pass office. This was a one-story brick building, which was about five meters long and five meters wide. This entrance was guarded 24 hours a day by one guard, armed with a pistol. Guards were changed every eight hours. All individuals, either entering or leaving the premises, had to show a dark-blue cardboard pass, consisting of two parts. Inside the left half was the owner's photograph, with an official stamp, the owner's full name, the expiration date of the pass, and the signature of the chief of the pass office which issued the pass. The inside right half of the pass contained the pass extensions, which were of one year duration, and the same official stamp and signature. Passes were issued for one year.

6. Secondary side entrance. This entrance was only provided with a wooden guard hut and was also guarded 24 hours a day by a guard who was armed with a pistol. [redacted] the entire guard did not consist of more than ten individuals. All guards were civilians wearing a dark-blue uniform without epaulettes and with no special insignia. 25X1

7. Recreation and sports area (Sportivnaya ploshchadka). This area contained tennis, volleyball, and basketball courts. All employees could use these facilities during rest periods.

8. Scientific Research Institute No 380.

9. Physical and Technical Institute.

10. Garden of Polytechnic Institute.

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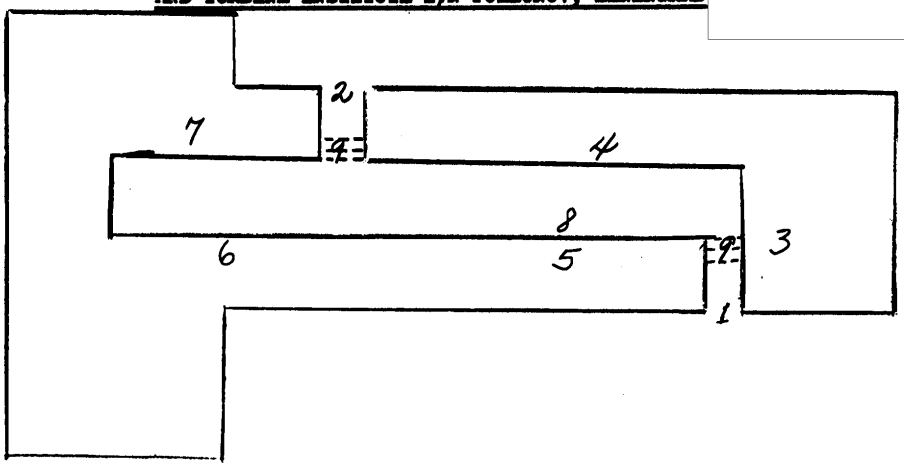
Sketch-B
GROUND FLOOR, MAIN BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE I/M POLZUNOV, LENINGRAD



LEGEND TO DIAGRAM OF THE MAIN BUILDING (approximate layout)

Sketch B - Ground Floor:

1. Unguarded entrance. This entrance led to a staircase and to a corridor (see 8 and 9). The ground floor was a semi-basement with the windows about half above the ground and half below ground level.

2. Second entrance to the main building.

3. Endurance Testing Laboratory.

4. Workshop belonging to Department No 9, whose activity was unknown.

5. Workshop belonging to Department No 10 or 11.

6. Workshop belonging to the Laboratory for Turbine Automatization of Department No 5. This workshop contained two or three machine tools and mechanical equipment.

7. Supply room containing various supplies, such as light bulbs, alcohol, and chemical agents.

8. Corridor.

9. Stairs, consisting of about 15 steps, leading down to basement-ground floor and to the second floor.

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Sketch C
SECOND FLOOR, MAIN BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE I/N POLZUNOV, LENINGRAD

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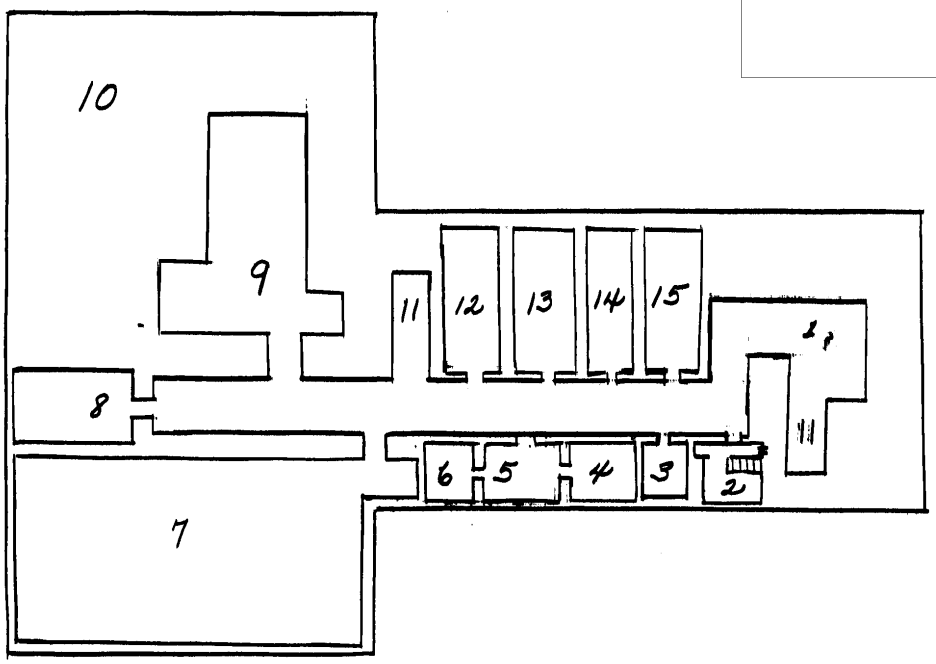

Sketch C - Second Floor, Main Building:

1. Entrance hall and cloak room.

2. Finance section with about four cashier's windows.

3. Office of the Deputy to the Director for Housekeeping Matters, which was about 20 square meters in size. The Deputy occupied this office by himself.

4. Office of the Director of the Institute, which was about 30-35 square meters in size. The Director occupied this office by himself.

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5. Secretary to both the Director and to the Deputy to the Director for Scientific Matters. This office was about 15 square meters in size.

6. Office of the Deputy to the Director for Scientific Matters. This office was about 30-35 square meters in size.

7. Conference Room (Aktovyy zal). This room was also used as a recreation room (klub). It was equipped with rows of seats, an elevated platform, and removable black boards. It held about 400 people and was about 200 square meters in size.

8. Personnel Office, which was about 20 square meters in size.

25X1

[redacted] 25X1

9. Dining room for about 500 employees of the Institute. Meal hours and work breaks were staggered so that employees could be fed at successive sittings.

10. Approximate area where kitchen and other workshops were located.

11. Stairs.

12. Office of the Chief Engineer of the Institute, which was about 20 square meters in size.

13. Laboratory of Department No 7.

14. Production Planning Department, which was about 25 square meters in size.

15. Supply Department.

[redacted] 25X1

[redacted] 25X1

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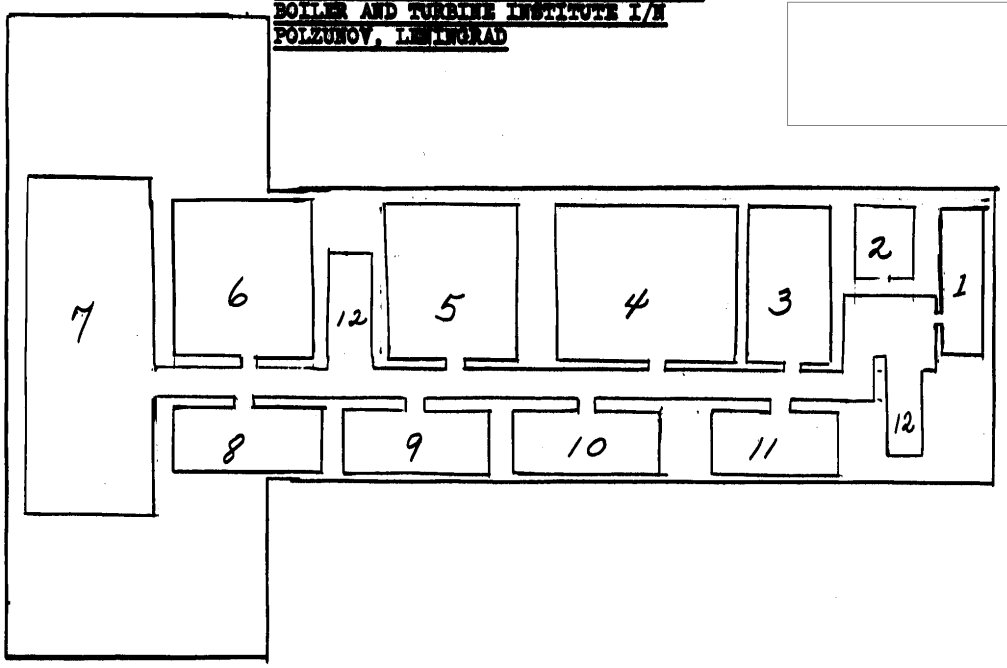
Sketch D
THIRD FLOOR, MAIN BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE I/M POLZUNOV, LENINGRAD

[redacted] 25X1



Sketch D - Third Floor, Main Building:

1. Party Office occupied by the Party Organizer for the Institute. This office was about 30 square meters in size.

2. Plant Committee of the Trade Union Organization.

3. Dispensary (Meditsinskiy punkt). One female doctor was on duty to provide first-aid treatment.

4. Laboratory for Department No 3.

5. Laboratory for Turbine Automatization of Department No 5.

6. Laboratory for Department No 3.

7 - 11. Area where the Standard or Calibrating Laboratory was located. These rooms contained measuring instruments and equipment of all types.

12. Stairs.

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[redacted] 25X1

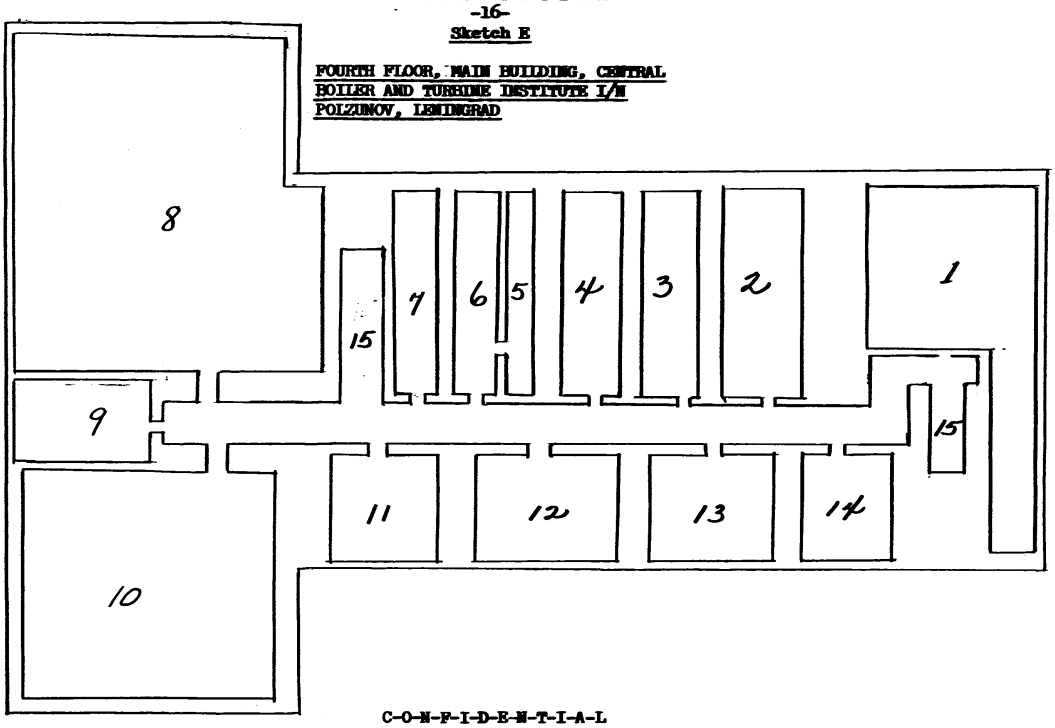
25X1

C-O-N-F-I-D-E-N-T-I-A-L

25X1

Sketch E

FOURTH FLOOR, MAIN BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE I/M POLZUNOV, LENINGRAD



C-O-N-F-I-D-E-N-T-I-A-L

25X1

25X1

Sketch E - Fourth Floor, Main Building:

1. Technical Library. This library, which had a staff of four women, contained technical books and journals in the Russian [redacted]. All employees of the Institute had access to this library. By Soviet standards the library was fairly complete and books could always be procured from other libraries by means of inter-library loans (mezh-bibliotechnyy abonement). 25X1

2. Room belonging to the Laboratory for Boiler Automatization of Department No 5. This room contained drafting tables, desks, and instrument stands. About five individuals worked here.

3. Same as Point No.2. [redacted] about six [redacted] worked here. 25X1

4. Same as Point No 2.

5. Office of the Chief of Department No 5.

6. Same as Point No 2.

7. Same as Point No 2.

8 - 10. Chemical laboratories of Department No 4.

11,13,14. Room of the Laboratory for Automatization of Special Installations.

12. Office of the Secret Department [redacted] the door of which was always closed. One needed a pass to enter this office. There was a bell on the outside so that if one wanted to enter, he pushed the button to ring the bell and a standard light bulb affixed over the door would light up signifying that the person could enter. 25X1

15. Stairs.

[redacted]

25X1

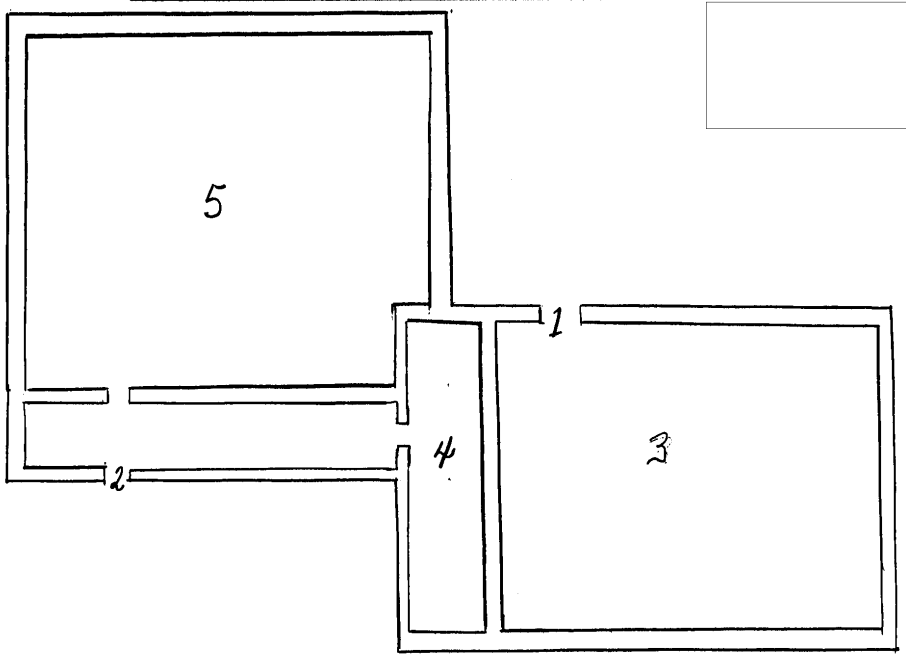
25X1

C-O-N-F-I-D-E-N-T-I-A-L

Sketch F

GROUND FLOOR, WORKSHOP BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE, I/N POLZUNOV, LENINGRAD

25X1



LEGEND TO DIAGRAM OF THE WORKSHOP BUILDING

Sketch F - Ground Floor:

1 and 2. Unguarded entrances, which were locked from 2000 to 0600 hours.

3. Machine shop of the Industrial Combine. This shop, which was about 200 square meters in size, contained lathes, milling and cutting machines, drills, and other types of machine tools.

4. Carpenter's shop of the Industrial Combine, which was about 100 square meters in size.

5. Foundry shop of the Industrial Combine.

25X1

C-O-N-F-I-D-E-N-T-I-A-L

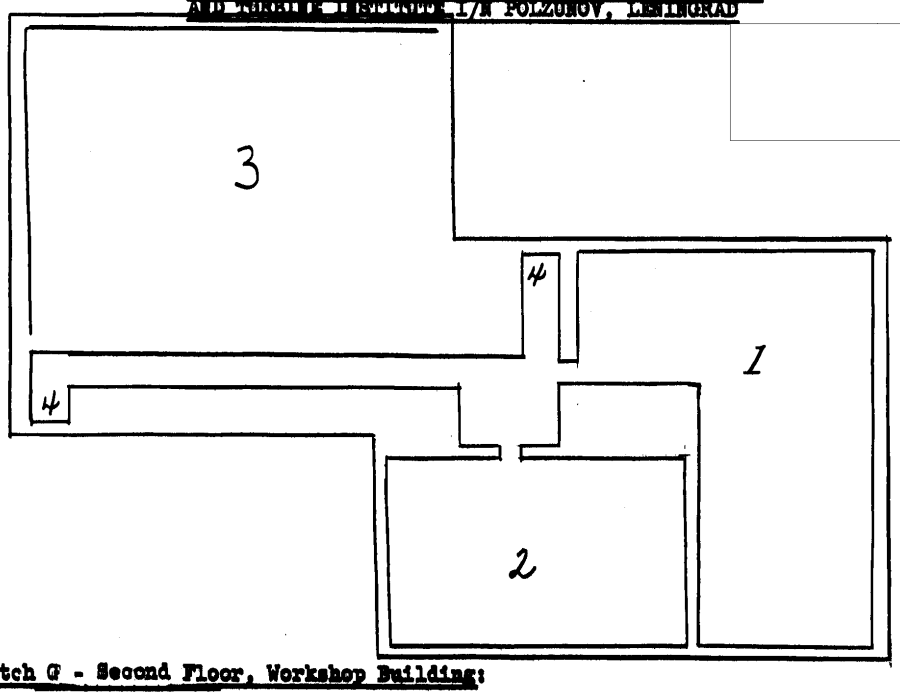
25X1

25X1

Sketch 6

SECOND FLOOR, WORKSHOP BUILDING, CENTRAL BOILER AND [illegible] I/M POLZUNOV, LENINGRAD

25X1



Sketch 6 - Second Floor, Workshop Building:

1. Galvanizing Shop. This shop was about 100 square meters in size and it contained various electrolytic tubs and galvanizing equipment.

2. Workshop belonging to Department No 5. This shop, which was about 70 square meters in size, contained machine tools and various measuring equipment.

3. Mechanical Job Workshop of the Experimental Plant of the Industrial Combine. This shop was about 200 square meters in size.

4. Stairs.

25X1

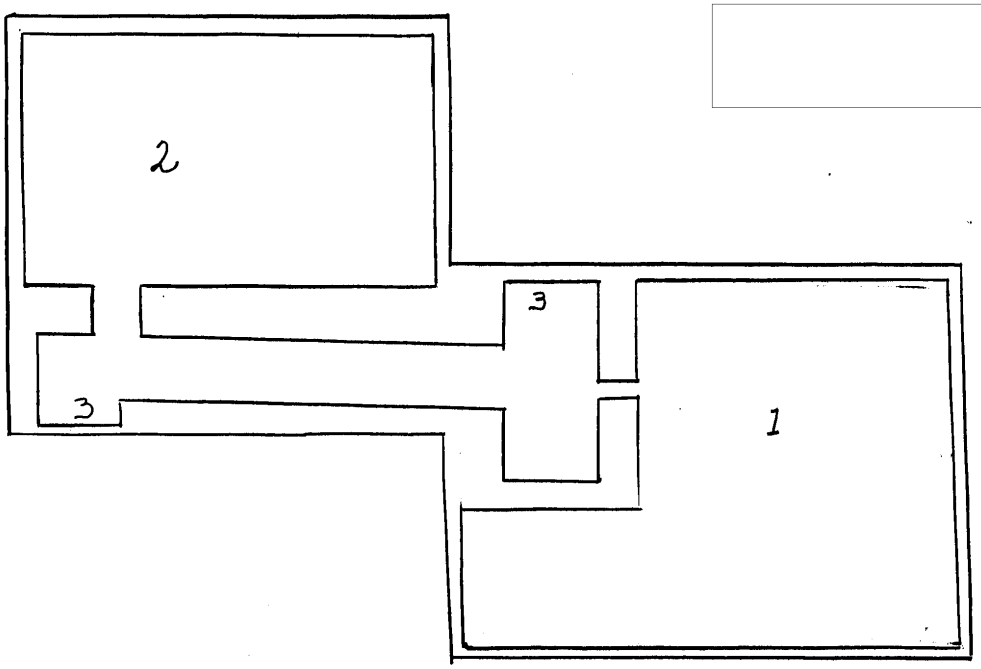
[redacted] 25X1

C-O-N-F-I-D-E-N-T-I-A-L

Sketch H

THIRD FLOOR, WORKSHOP BUILDING, CENTRAL BOILER AND TURBINE INSTITUTE I/N POLZUNOV, LENINGRAD

[redacted] 25X1



Sketch H - Third Floor, Workshop Building:

1. Technical Information Office. This office, which was about 150 square meters in size, contained blue-printing equipment, a photographic laboratory, and the translation section.

2. Office of the Chief Technologist of the Experimental Plant of the Industrial Combine. This office, which was about 180 square meters in size, was occupied by engineers, draftsmen, and tracers (kopirovshchiki).

3. Stairs.

Attachment:
Chart of the organization of the Central Boiler and Turbine Institute i/n Polzunov, Leningrad.

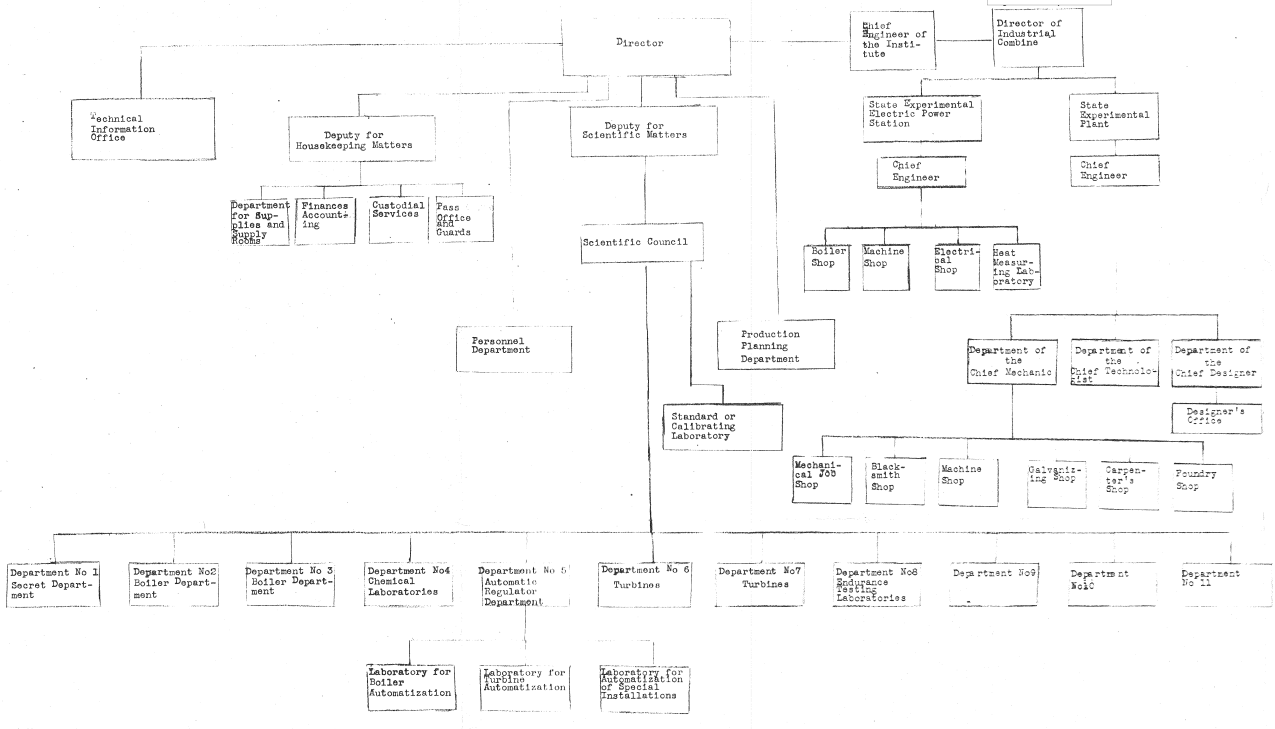
C-O-N-F-I-D-E-N-T-I-A-L

[redacted] 25X1

CONFIDENTIAL

CHART OF ORGANIZATION OF THE CENTRAL BOILER AND TURBINE INSTITUTE I/N POLZUNOV, LENINGRAD

Attachment



CONFIDENTIAL

25X1

C-O-N-F-I-D-E-N-T-I-A-L

25X1

COUNTRY: USSR (Ukrainian SSR)

DATE: 15 January 1958

SUBJECT: 1. Azovstal Metallurgical Plant in Zhdanov
2. Control and Measurement Instruments Plant in Kharkov

NO OF PAGES: 7

25X1

AZOVSTAL METALLURGICAL PLANT IN ZHDANOV, UKRAINIAN SSR

General

1. 25X1

the Azovstal Metallurgical Plant (Metallurgicheskiy zavod Azovstal) in Zhdanov (N 47-05, E 37-36), Ukrainian SSR, 25X1

an automatic regulator system. The regulator system, which was developed by the Institute, was for Boiler No 3 of the Heating and Electric Power Plant (Teploelektrotsentral - TETs) of Azovstal (See Sketch A, page 4, for a chart showing the organization of the TETs and Point No 10 of Sketch B, page 5, for a diagram of the general site layout of Azovstal, and legend to the sketch on pages 6 and 7).

C-O-N-F-I-D-E-N-T-I-A-L

25X1

25X1

2. The Heating and Electric Power Plant (TETs), which had an average power output of 50 megawatt hours, was one of the links in the Donbass Energo electric power system. It produced steam only for Azovstal. The TETs consisted of four boilers, numbered one through four, and two turbines. Boiler No 4 was put into service [redacted] Boilers No 1 and 2 were [redacted] medium-pressure boilers of 33 atmospheres; they each had a maximum evaporative value (paroproizvoditelnost) of 160 tons per hour. Both Boilers No 1 and 2 operated in parallel with one turbine, without intermediate reduction and cooling equipment (Bez pomezhutochnoy redukts-ionno-okhladitelnoy ustanovki). Boilers No 3 and 4, which were built by the Red Boilermaker Plant (Zavod krasnyy kotelshchik) in Taganrog, were high-pressure boilers of 110 atmospheres with an overheating temperature (temperatura peregreva) of 550 degrees centigrade. Each had a maximum evaporative value of 230 tons per hour. Both of these boilers operated in parallel with the second turbine equipped with an intermediate reduction and cooling system. The fuel utilized by the four boilers consisted mainly of blast-furnace gas (domennyy gaz), partly of coke gas (koksovyy gaz), and coal dust (ugolnaya pyl). The blast-furnace gas was produced by the Blast Furnace Department, the coke gas by the Coal-Tar Chemical Plant, and the coal dust by the TETs itself.

25X1

25X1

3. Administratively, the TETs comprised the following personnel:

a. Chief of the TETs Sroyelov (fnu), an administrator and technician.

b. Chief Engineer of the TETs (nu), an engineer.

c. Chief of the Technical Department (Tekhnicheskiy otdel), an engineer. The Technical Department consisted of about five male and female technicians.

d. Chief of the Boiler Shop (Kotelnyy tsekh), who was an engineer. The Boiler Shop comprised about 40 male and female workers.

e. Chief of the Machine or Turbine Shop (Mashinnyy tsekh), an engineer. The Machine Shop comprised about 30 male and female workers.

f. Chief of the Electrical Shop (Elektrotsekh), an engineer. This shop comprised about 20 to 25 male and female workers.

g. Chief of the Heat-Measuring Laboratory (Teploizmeritelnaya laboratoriya), who was a technician. The laboratory comprised about 15 male and female workers, including some technicians.

h. Chief of the Chemical Laboratory (Khimicheskaya laboratoriya), who was an engineer. The personnel comprised about ten female laboratory workers.

i. Chief of the Fuel Shop (Toplivnyy tsekh). The shop comprised about 20 male and female workers.

[redacted]

25X1

25X1

Automatic Regulator System

4. The automatic regulator system installed on Boiler No 3 was designed to regulate the combustion process in this boiler. The difference between this regulator system and the previously used regulator system was that the new system rendered automatic the combustion process involving two types of fuel. The former regulator system was only designed to render automatic the combustion process in boilers using only one type of fuel. Boiler No 3 used primarily blast furnace gas as fuel; only when this gas was not available in sufficient quantities did Boiler No 3 use coal dust as an additional fuel. Boiler No 3 also used coke gas as a fuel whenever such coke gas was available. However, coke gas was not regularly available, therefore, the coke gas combustion process was not rendered automatic. The automatic regulator system allowed both for the consecutive combustion of blast-furnace gas and of coal dust, as well as for the parallel combustion of these two fuels in given proportions. The regulator system consisted of the following regulators:

   a. Pressure regulator of an electro-mechanical type, which utilized the inputs of steam pressure and acted through two resistance bridge circuits (reostatnaya mostovaya skhema) upon the engines driving both the slide valve (shiber) for the blast furnace gas, and the controller (kontroller) for the coal dust feeder (pylepitatel).

   b. Main air regulator of the four-fold input type (chetyrekh impulsnyy) which received its input from the steam pressure, the air consumption, the blast-furnace gas consumption, and the position of the output spindle (vykhodnoy val) of the pressure regulator. The first three inputs were static, the fourth dynamic.

   c. Two identical regulators which controlled the ratio or correlation between the amount of blast-furnace gas and the amount of air necessary to burn this blast-furnace gas.

   d. Two identical regulators which controlled the ratio or correlation between the amount of coke gas and the amount of air necessary to burn this coke gas.

   e. The draft or air exhaustion regulator.

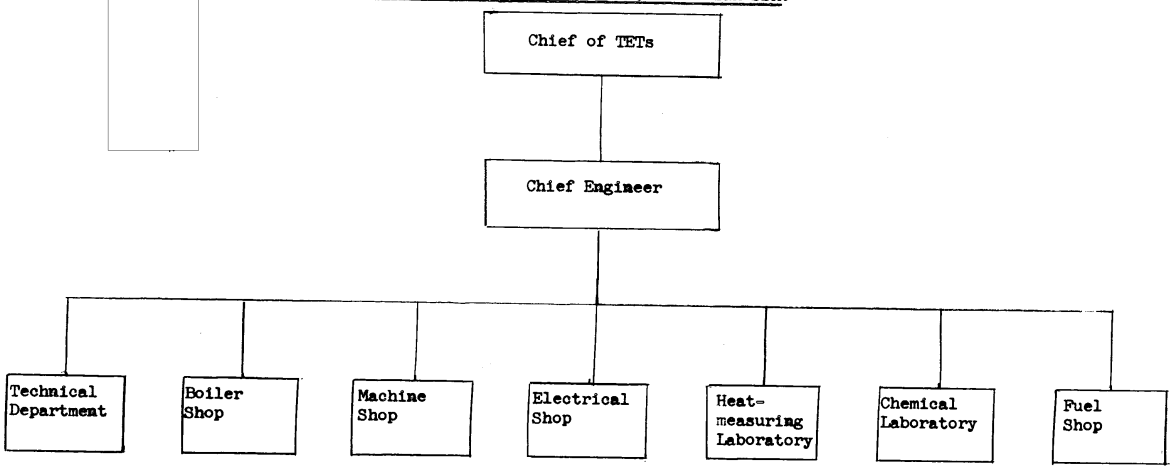
5. This system did not include any electronic units. The experiments conducted on this automatic regulator system demonstrated the latter's serviceability and adequacy with one exception: the experiments with respect to the parallel combustion of both fuels, that is the blast-furnace gas and coal dust, were unsuccessful. The system provided a maximum tolerance for steam pressure of plus or minus two atmospheres.

25X1

25X1

Sketch A

Chart of the Organization of the Heating and Electric Power Plant (TETs) of Azovstal, Zhdanov, Ukrainian SSR.



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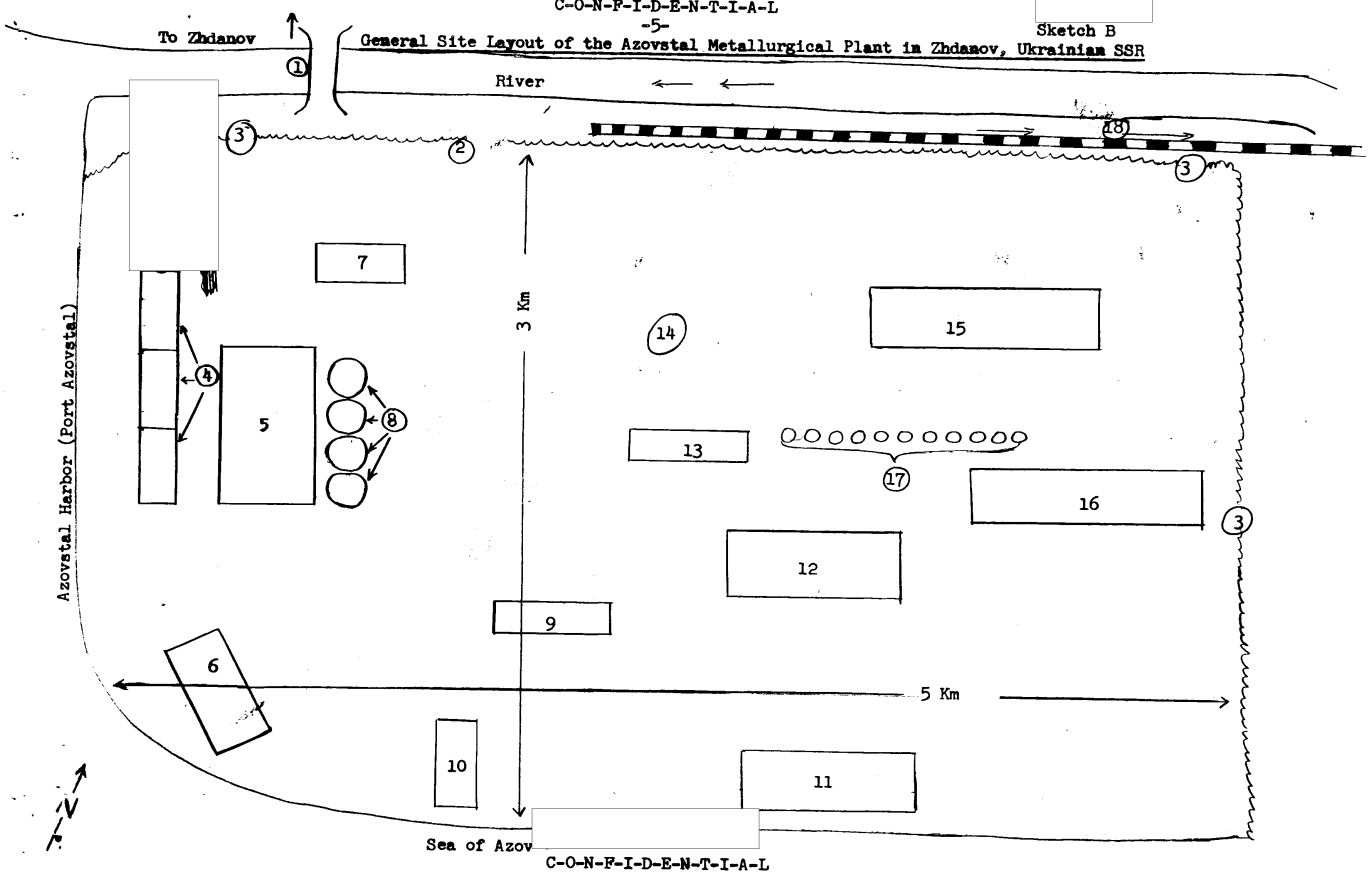
25X1

[redacted]

Sketch B

General Site Layout of the Azovstal Metallurgical Plant in Zhdanov, Ukrainian SSR



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The following is a legend to the sketch of a general site layout of the Azovstal Metallurgical Plant (see page 5 for the sketch):

1. Bridge, about 50 meters long, 5 meters wide, of metal construction, with a load capacity of about ten tons.

2. Main entrance and control point (Kontrolno-propusknoy punkt i byuro propuskov). This entrance was guarded 24 hours a day by civilian guards in dark-blue uniform who were armed with pistols. All persons entering or leaving the premises had to show a permanent or temporary pass. [redacted] the temporary pass [redacted] was a small manila-colored card showing the owner's name, his duty, and the expiration date. It also bore a stamp and the signature of the chief of the pass office. The pass office was also located at this point in a two-story brick building.

25X1

3. Brick wall, which was about two meters high. It surrounded the entire plant area. However, the wall was in a state of disrepair and partly broken down along the harbor and the Azov Sea.

4. Three traveling gantry cranes (Portalnye krany) which were about 60 meters high. Two of these cranes had a length of span of about 200 meters, and the other had a length of span of about 60 meters. They were used to unload the iron ore from the ships onto the stockyard (rudnyy dvor) and then to load it from there into the blast furnaces.

5. Stockyard, which was about 300 meters by 200 meters in size.

6. Guarded warehouses, contents of which were unknown.

7. Steam power and water plant (Paroelektro-vodnaya stantsiya), which produced steam, electric power, and hot water, especially for the needs of the Blast Furnace Department.

8. Blast Furnace Department (Domennyy tsekh) comprising four blast furnaces.

9. State Institute for Metallurgical Development (Gosudarstvennyy institut proyektirovaniya metallurgii - Gipromet). This three-story yellowish-brick building housed a branch of the State Institute for Metallurgical Development, which was probably located in Moscow. This branch worked on plans for the enlargement and development of Azovstal.

10. Heating and Electric Power Plant (Teploelektrotsentral - TETs). This was an eight-story yellowish-brick building, mainly designed to house four boilers and turbines.

11. Ore Concentration Plant (Obogatitelnaya fabrika).

12. Machine Shop (Mekhanicheskiy tsekh), which did metal work and produced parts.

13. Plant management (Zavod upravleniye). This three-story yellowish-brick building housed the management of Azovstal.

14. Gas tanks (Gazoviye konteynery). These tanks, which were several in number, were about ten meters high.

[redacted]

25X1

25X1

15. Coal-Tar Chemical Plant (Koksokhimicheskiy zavod).

16. Rolling Mill Shop (Prokatnyy tsekh).

17. Open-hearth Department (Martenovskiy tsekh), comprising 11 open-hearth furnaces.

18. Trolley-car line going to worker's housing settlement (Rabochiy poselok), which was located about five kilometers northeast of Azovstal. This settlement housed about 5,000 persons (workers and their families).

CONTROL AND MEASUREMENT INSTRUMENTS PLANT IN KHARKOV, UKRAINIAN SSR

6. The Control and Measurement Instruments Plant (Kontrolno - izmeritelnye pribory zavod - KIP) in Kharkov, Ukrainian SSR, which was under the Ministry of Ferrous Metallurgy (sic), produced control and measuring instruments as well as automatic regulators for metallurgical plants of the Ministry. this plant, was located at either No 10 or No 12 Ulitsa Darvina The main emphasis at the KIP plant was on the production of instruments and regulators working on hydraulic principles. The equipment produced by the KIP plant was used on boilers, turbines, blast furnaces, rolling mills (prokatnyy stan), and miscellaneous weighing scales. In 1956 the plant also started producing remote control (teleupravleniye) and remote control measurement (teleizmereniye) equipment. 25X1

7. 25X1
the chief of the Electrical Laboratory (Elektro-laboratoriya) of the plant was Yuriy Ivanovich Pivovarov.

25X1

25X1